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ALLI, IYABO	
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SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/532,776	Applicant(s) HENTSCHEL ET AL.
	Examiner IYABO S. ALLI	Art Unit 2112

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 April 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,5-11,13-16 and 25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 5-11,13-16, & 25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *4/22/2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *4/22/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims **1 & 16** are rejected under 35 U.S.C. 102(**b**) as being anticipated by **Noe** (US 6,665,106).

Noe discloses a method for optical polarization control comprising:

In regards to claim 1, a polarization conversion unit adapted for receiving from an optical circuit a first optical signal **OS** with a first polarization state **P1**, and for generating, from said first optical signal, a set of n derived optical signals **OS** with n different well-defined polarization states i, i=1, . . . , n, with n being a natural number greater than one (Column 7, lines 29-35 and Fig. 5), wherein said n different well-defined polarization states **P1 & P2** are selected such that the sum of the cosines of δ_1 over the n polarization states i, i=1, . . . , n, with δ_1 denoting the angle between the respective polarization state i and the polarization state of maximum transmission of the optical circuit in a Poincare sphere representation (Fig. 6), is substantially equal to zero (Column 8, lines 14-20).

In regards to claim 16, A method for reducing or eliminating polarization dependent measurement errors, said method comprising the steps of: receiving a first

optical signal **OS** from an optical circuit, generating from the first optical signal a set of n derived optical signals **OS** with n different well-defined polarization states **P1 & P2**, whereby said n different well-defined polarization states **P1 & P2** are selected such that the sum of the cosines of δ_1 over the n polarization states i, i=1, . . . , n, with δ_1 denoting the angle between the respective polarization state i and the polarization state of maximum transmission of the optical circuit in a Poincare sphere representation (Fig. 6), is substantially equal to zero (Column 14, lines 1-18 and Fig. 3).

3 Claim **25** is rejected under 35 U.S.C. 102(**b**) as being anticipated by **Anderson et al.** (US 6,704,106).

Anderson et al. discloses a method and system for canceling system retardance error in an ophthalmological polarimeter comprising:

In regards to claim 25, a software program or product, stored on a data carrier **142**, for controlling the steps of: receiving a first optical signal from an optical circuit, generating from the first optical signal a set of n derived optical signals with n different well-defined polarization states, whereby said n different well-defined polarization states are selected such that the sum of the cosines of δ_1 over the n polarization states i, i=1, . . . , n, with δ_1 denoting the anile between the respective polarization state i and the polarization state of maximum transmission of the optical circuit in a Poincare sphere representation, is substantially equal to zero, when run on a data processing system such as a computer **98** (Column 8, lines 16-19 and Fig. 3).

Claim Rejections - 35 USC § 103

4 The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5 . Claims **6, 9, 11 & 13** are rejected under 35 U.S.C. 103 (**a**) as being unpatentable over **Noe** (US 6,665,106) in view of **Anderson et al.** (US 6,704,106).

Noe discloses all of the claimed limitations from above except the polarization conversion unit can be represented by a Stokes vector with the coordinates 1, a, b, c in a Poincare sphere representation, four derived optical signals with four different polarization states are generated, whereby said four polarization states can be represented by Stokes vectors with each the coordinates 1, a, -c, b; 1, -a, -c, -b; 1, -a, c, b; and 1, a, c, -b in a Poincare sphere representation, a rotatable half wave plates and a rotatable quarter wave plate for generating said n derived optical signals, a polarization unit, a determination unit adapted for measuring the signal strengths of the n derived optical signals generated by said polarization conversion unit, and an averaging unit, which determines an average value of the signal strengths for the n derived optical signals, a measurement set-up for determining an insertion loss of a device under test comprising a light source, in particular a tunable light source, adapted for generating light that is incident on said DUT; said DUT which generates, in response to said incident light, a response signal; and a polarization conversion unit

which derives, from at least one of: said incident light or said response signal, a set of n derived optical signals with n different well-defined polarization states; a determination unit adapted for measuring the signal strengths of the n derived optical signals generated by said polarization conversion unit; and an averaging unit which averages the measurement results obtained for the n derived well-defined polarization states.

However, **Anderson et al.** teaches, **in regards to claim 6,** the polarization conversion unit can be represented by a Stokes vector **[I, Q, U, V]** with the coordinates 1, a, b, c in a Poincare sphere representation, four derived optical signals with four different polarization states are generated, whereby said four polarization states can be represented by Stokes vectors **[I, Q, U, V]** with each the coordinates 1, a, -c, b; 1, -a, -c, -b; 1, -a, c, b; and 1, a, c, -b in a Poincare sphere representation (Column 17, lines 1-7 and Figs. 5 & 7).

In regards to claim 9, a rotatable half wave plates **108** and a rotatable quarter wave plate for generating said n derived optical signals (Column 16, lines 1-4 and Fig. 3).

In regards to claim 11, a polarization unit **184** (Column 14, lines 7-9 and Fig. 4); a determination unit **204** adapted for measuring the signal strengths of the n derived optical signals **116 & 118** generated by said polarization conversion unit (Column 15, lines 2-6 and Fig. 4); and

an averaging unit **149**, which determines an average value of the signal strengths for the n derived optical signals **116 & 118** (Column 27, lines 19-26 and Fig. 3).

In regards to claim 13, a measurement set-up for determining an insertion loss of a device under test comprising a light source **74**, in particular a tunable light source, adapted for generating light that is incident on said DUT **50** (Column 4, lines and Fig. 3);

said DUT **50** which generates, in response to said incident light, a response signal; and a polarization conversion unit which derives, from at least one of: said incident light or said response signal, a set of n derived optical signals **116 & 118** with n different well-defined polarization states (Column 6, lines 3-9 and Fig. 3);

a determination unit **204** adapted for measuring the signal strengths of the n derived optical signals **116 & 118** generated by said polarization conversion unit (Column 15, lines 2-6 and Fig. 4); and

an averaging unit **149** which averages the measurement results obtained for the n derived well-defined polarization states (Column 27, lines 19-26 and Fig. 3).

Given the teachings of **Anderson et al.**, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method for optical polarization control of **Noe** with the polarization conversion unit can be represented by a Stokes vector with the coordinates 1, a, b, c in a Poincare sphere representation, four derived optical signals with four different polarization states are generated, whereby said four polarization states can be represented by Stokes vectors with each the coordinates 1, a, -c, b; 1, -a, -c, -b; 1, -a, c, b; and 1, a, c, -b in a Poincare sphere

representation, a rotatable half wave plates and a rotatable quarter wave plate for generating said n derived optical signals, a polarization unit, a determination unit adapted for measuring the signal strengths of the n derived optical signals generated by said polarization conversion unit, and an averaging unit, which determines an average value of the signal strengths for the n derived optical signals, a measurement set-up for determining an insertion loss of a device under test comprising a light source, in particular a tunable light source, adapted for generating light that is incident on said DUT; said DUT which generates, in response to said incident light, a response signal; and a polarization conversion unit which derives, from at least one of: said incident light or said response signal, a set of n derived optical signals with n different well-defined polarization states; a determination unit adapted for measuring the signal strengths of the n derived optical signals generated by said polarization conversion unit; and an averaging unit which averages the measurement results obtained for the n derived well-defined polarization states.

Doing so would allow a common measurement from the optical signals being analyzed.

6 Claim **10** is rejected under 35 U.S.C. 103 (**a**) as being unpatentable over **Noe** (US 6,665,106) in view of **Anderson et al.** (US 6,704,106), and further in view of **Chun** (US 6,563,582).

Noe's invention as modified by **Anderson et al.**, discloses all of the claimed limitations above except said half wave plate is rotated by 0.degree. and said quarter wave plate is rotated by 0.degree. in order to generate a first derived optical signal

corresponding to a Stokes vector 1, a, c, -b; said half wave plate is rotated by 45.degree. and said quarter wave plate is rotated by 0.degree. in order to generate a second derived optical signal corresponding to a Stokes vector 1, -a, c, b; said half wave plate is rotated by 45.degree. and said quarter wave plate is rotated by 90.degree. in order to generate a third derived optical signal corresponding to a Stokes vector 1, -a, -c, -b; said half wave plate is rotated by 0.degree. and said quarter wave plate is rotated by 90.degree. in order to generate a fourth derived optical signal corresponding to a Stokes vector 1, a, -c, b in a Poincare sphere representation, whereby said four derived optical signals are generated in arbitrary order.

However, **Chun** teaches, **in regards to claim 10,** said half wave plate **52** is rotated by 0.degree. and said quarter wave plate **44** is rotated by 0.degree. in order to generate a first derived optical signal corresponding to a Stokes vector 1, a, c, -b; said half wave plate **52** is rotated by 45.degree. and said quarter wave plate **44** is rotated by 0.degree. in order to generate a second derived optical signal corresponding to a Stokes vector 1, -a, c, b; said half wave plate **52** is rotated by 45.degree. and said quarter wave plate **44** is rotated by 90.degree. in order to generate a third derived optical signal corresponding to a Stokes vector 1, -a, -c, -b; said half wave plate **52** is rotated by 0.degree. and said quarter wave plate **44** is rotated by 90.degree. in order to generate a fourth derived optical signal corresponding to a Stokes vector 1, a, -c, b in a Poincare sphere representation, whereby said four derived optical signals are generated in arbitrary order (Column 26, lines 14-31 and Fig. 6).

Given the teachings of **Chun**, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method for optical polarization control of **Noe** with said half wave plate is rotated by 0.degree. and said quarter wave plate is rotated by 0.degree. in order to generate a first derived optical signal corresponding to a Stokes vector 1, a, c, -b; said half wave plate is rotated by 45.degree. and said quarter wave plate is rotated by 0.degree. in order to generate a second derived optical signal corresponding to a Stokes vector 1, -a, c, b; said half wave plate is rotated by 45.degree. and said quarter wave plate is rotated by 90.degree. in order to generate a third derived optical signal corresponding to a Stokes vector 1, -a, -c, -b; said half wave plate is rotated by 0.degree. and said quarter wave plate is rotated by 90.degree. in order to generate a fourth derived optical signal corresponding to a Stokes vector 1, a, -c, b in a Poincare sphere representation, whereby said four derived optical signals are generated in arbitrary order.

Doing so would allow a plurality of polarization states to be represented into Stokes vectors, when the optical signals have been received.

7 Claims **7 & 14** are rejected under 35 U.S.C. 103 (**a**) as being unpatentable over **Noe** (US 6,665,106) in view of **Anderson et al.** (US 6,704,106), and furthermore in view of **Miller** (US 6,552,836).

Noe 's invention, as furthermore modified by **Anderson et al.**, discloses all of the claimed limitations above except the polarization conversion unit comprising a planar rotator, preferably a Faraday rotator, preferably based on an optically active material, and a rotatable quarter wave plate for generating said n derived optical signals, a

polarization controller for converting the light of said light source to a number of polarization states at the input of the DUT.

However, **Miller** teaches, **in regards to claim 7,** the polarization conversion unit comprising a planar rotator, preferably a Faraday rotator **39'** (Column 7, lines 1-5 and Fig. 5), preferably based on an optically active material, and a rotatable quarter wave plate for generating said n derived optical signals (Column 3, lines 2-8 and Fig. 1).

In regards to claim 14, a polarization controller for converting the light **17** of said light source to a number of polarization states at the input of the DUT (Page 6, lines 5-8 and Fig. 7).

Given the teachings of **Miller,** it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method for optical polarization control of **Noe** with the polarization conversion unit comprising a planar rotator, preferably a Faraday rotator, preferably based on an optically active material, and a rotatable quarter wave plate for generating said n derived optical signals, a polarization controller for converting the light of said light source to a number of polarization states at the input of the DUT.

Doing so would allow the optical signals to be accurately determined after the device under test is measured and a number of polarization states are produced.

8. Claim **8** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Noe** (US 6,665,106) in view of **Miller** (US 6,552,836), and furthermore in view of **Chun** (US 6,563,582).

Noe's invention as furthermore modified **Miller**, by discloses all of the claimed limitations above except a planar rotator that is set to a rotation angle of 0.degree. and said quarter wave plate is rotated by 0.degree. in order to generate a first derived optical signal corresponding to a Stokes vector 1, a, -c, b; said planar rotator is set to a rotation angle of 90.degree. and said quarter wave plate is rotated by 0.degree. in order to generate a second derived optical signal corresponding to a Stokes vector 1, -a, -c, -b; said planar rotator is set to a rotation angle of 90.degree. and said quarter wave plate is rotated by 90.degree. in order to generate a third derived optical signal corresponding to a Stokes vector 1, -a, c, b; said planar rotator is set to a rotation angle of 0.degree. and said quarter wave plate is rotated by 90.degree. in order to generate a fourth derived optical signal corresponding to a Stokes vector 1, a, c, -b in a Poincare sphere representation, whereby said four derived optical signals are generated in arbitrary order, and

However, **Chun** teaches, **in regards to claim 8,** said planar rotator **40** is set to a rotation angle of 0.degree. and said quarter wave plate **44** is rotated by 0.degree. in order to generate a first derived optical signal corresponding to a Stokes vector 1, a, -c, b; said planar rotator **40** is set to a rotation angle of 90.degree. and said quarter wave plate **44** is rotated by 0.degree. in order to generate a second derived optical signal corresponding to a Stokes vector 1, -a, -c, -b; said planar rotator **40** is set to a rotation angle of 90.degree. and said quarter wave plate **44** is rotated by 90.degree. in order to generate a third derived optical signal corresponding to a Stokes vector 1, -a, c, b; said planar rotator **40** is set to a rotation angle of 0.degree. and said quarter wave plate **44** is

rotated by 90.degree. in order to generate a fourth derived optical signal corresponding to a Stokes vector 1, a, c, -b in a Poincare sphere representation, whereby said four derived optical signals are generated in arbitrary order (Columns 17 and 23, lines 1-10 and Fig. 8).

Given the teachings of **Chun**, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method for optical polarization control of **Noe** with a planar rotator that is set to a rotation angle of 0.degree. and said quarter wave plate is rotated by 0.degree. in order to generate a first derived optical signal corresponding to a Stokes vector 1, a, -c, b; said planar rotator is set to a rotation angle of 90.degree. and said quarter wave plate is rotated by 0.degree. in order to generate a second derived optical signal corresponding to a Stokes vector 1, -a, -c, -b; said planar rotator is set to a rotation angle of 90.degree. and said quarter wave plate is rotated by 90.degree. in order to generate a third derived optical signal corresponding to a Stokes vector 1, -a, c, b; said planar rotator is set to a rotation angle of 0.degree. and said quarter wave plate is rotated by 90.degree. in order to generate a fourth derived optical signal corresponding to a Stokes vector 1, a, c, -b in a Poincare sphere representation, whereby said four derived optical signals are generated in arbitrary order, and

Doing so would allow a plurality of polarization states to be represented in Stokes vectors at the desired rotation angles, when the optical signals have been received.

9. Claims **5 & 15** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Noe** (US 6,665,106) in view of **Miller** (US 6,552,836), and furthermore in view of **Miller** (US 6,421,131).

Noe's invention as furthermore modified **Miller**, by discloses all of the claimed limitations above except two derived optical signals with two different polarization states are generated, whereby the second one of said two polarization states is the inverse of the first one of said two polarization states and a measurement set-up for determining a polarization dependent loss of a device under test (DUT) comprising: a light source, in particular a tunable light source; a polarization controller adapted for varying the polarization state of the light emitted by said light source, in order to generate polarized light that is incident on said DUT;

said DUT which generates, in response to said polarized light, a response signal; and a polarization conversion unit according to claim 1, which derives, from at least one of: said incident light or said response signal, a set of n derived optical signals with n different well-defined polarization states, a determination unit adapted for measuring the signal strengths of the n derived optical signals generated by said polarization conversion unit; an averaging unit which averages the measurement results obtained for the n derived well-defined polarization states.

However, **Miller** teaches **in regards to claim 5,** two derived optical signals with two different polarization states are generated, whereby the second one of said two polarization states is the inverse of the first one of said two polarization states (Column 71, lines 2-8).

In regards to claim 15, a measurement set-up for determining a polarization dependent loss of a device under test (DUT) comprising: a light source **70**, in particular a tunable light source (Column 53, lines 1-5 and Fig. 6);

a polarization controller **18** adapted for varying the polarization state **2 & 3** of the light emitted by said light source **70**, in order to generate polarized light that is on said DUT; said DUT which generates, in response to said polarized light, a response signal (Column 63, lines 9-15 and Fig. 8);

a polarization conversion unit which derives, from at least one of: said incident light or said response signal, a set of n derived optical signals with n different well-defined polarization states **2 & 3**, a determination unit **149** adapted for measuring the signal strengths of the n derived optical signals generated by said polarization conversion unit (Column 71, lines 2-11 and Figs. 7 & 10); and

an averaging unit which averages the measurement results obtained for the n derived well-defined polarization states **2 & 3** (Column 10, lines 4-8).

Given the teachings of **Miller,** it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the of **Noe** with two derived optical signals with two different polarization states are generated, whereby the second one of said two polarization states is the inverse of the first one of said two polarization states and a measurement set-up for determining a polarization dependent loss of a device under test (DUT) comprising: a light source, in particular a tunable light source; a polarization controller adapted for varying the polarization state of the light emitted by said light source, in order to generate polarized light that is incident on said DUT; said

DUT which generates, in response to said polarized light, a response signal; and a polarization conversion unit according to claim 1, which derives, from at least one of: said incident light or said response signal, a set of n derived optical signals with n different well-defined polarization states, a determination unit adapted for measuring the signal strengths of the n derived optical signals generated by said polarization conversion unit; an averaging unit which averages the measurement results obtained for the n derived well-defined polarization states.

Doing so would allow the device that is being tested to get analyzed by the light and in turn give off optical signals without any interference from an outside source.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. **US 6,721,051 & US 7,154,668**.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to IYABO S. ALLI whose telephone number is 571-270-1331. The examiner can normally be reached on M-Th 7:30am- 5:00pm; 1st F-OFF & 2nd F- 7:30-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrell McKinnon can be reached on 571-272-4797. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

IYABO S. ALLI
Examiner
Art Unit 2112
January 10, 2007

Iyabo S. Alli

TERRELL L. MCKINNON
SUPERVISORY PATENT EXAMINER